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National Occupational Analysis

2010

Motor Vehicle Body Repairer (Metal and Paint)

Human Resources and Skills Development Canada
Ressources humaines et Développement des compétences Canada

Canada

Occupational Analyses Series

Motor Vehicle Body Repairer (Metal and Paint)

2010

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FOREWORD

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this National Occupational Analysis as the national standard for the occupation of Motor Vehicle Body Repairer (Metal and Paint).

Background

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to cooperate with provincial and territorial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. To this end, Human Resources and Social Development Canada (HRSDC) sponsors a program, under the guidance of the CCDA, to develop a series of National Occupational Analyses (NOA).

The NOAs have the following objectives:

- to describe and group the tasks performed by skilled workers;
- to identify which tasks are performed in every province and territory;
- to develop instruments for use in the preparation of Interprovincial Red Seal Examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility of apprentices and skilled workers in Canada; and,
- to supply employers, employees, associations, industries, training institutions and governments with analyses of occupations.

ACKNOWLEDGEMENTS

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This analysis was prepared by the Workplace Partnerships Directorate of HRSDC. The coordinating, facilitating and processing of this analysis were undertaken by employees of the NOA development team of the Trades and Apprenticeship Division. Doug Podetz for the host jurisdiction of British Columbia also participated in the development of this NOA.

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LIST OF PUBLISHED NATIONAL OCCUPATIONAL ANALYSES (Red Seal Trades)

TITLE	NOC* Code
Agricultural Equipment Technician (2007)	7312
Appliance Service Technician (2005)	7332
Automotive Painter (2009)	7322
Automotive Service Technician (2009)	7321
Baker (2006)	6252
Boilermaker (2008)	7262
Bricklayer (2007)	7281
Cabinetmaker (2007)	7272
Carpenter (2010)	7271
Concrete Finisher (2006)	7282
Construction Electrician (2008)	7241
Construction Craft Worker (2009)	7611
Cook (2008)	6242
Electrical Rewind Mechanic (1999)	7333
Electronics Technician – Consumer Products (1997)	2242
Floorcovering Installer (2005)	7295
Glazier (2008)	7292
Hairstylist (2009)	6271
Heavy Duty Equipment Technician (2009)	7312
Industrial Electrician (2008)	7242
Industrial Mechanic (Millwright) (2009)	7311
Instrumentation and Control Technician (2007)	2243
Insulator (Heat and Frost) (2007)	7293
Ironworker (Generalist) (2006)	7264
Ironworker (Reinforcing) (2006)	7264
Ironworker (Structural/Ornamental) (2006)	7264

* National Occupational Classification

TITLE	NOC* Code
Lather (Interior Systems Mechanic) (2007)	7284
Machinist (2005)	7231
Metal Fabricator (Fitter) (2008)	7263
Mobile Crane Operator (2009)	7371
Motorcycle Mechanic (2006)	7334
Motor Vehicle Body Repairer (Metal and Paint) (2010)	7322
Oil Burner Mechanic (2006)	7331
Painter and Decorator (2007)	7294
Partsperson (2005)	1472
Plumber (2008)	7251
Powerline Technician (2009)	7244
Recreation Vehicle Service Technician (2006)	7383
Refrigeration and Air Conditioning Mechanic (2009)	7313
Rig Technician (2008)	8232
Roofer (2006)	7291
Sheet Metal Worker (2006)	7261
Sprinkler System Installer (2009)	7252
Steamfitter — Pipefitter (2008)	7252
Tilesetter (2004)	7283
Tool and Die Maker (2005)	7232
Transport Trailer Technician (2008)	7321
Truck and Transport Mechanic (2007)	7321
Welder (2009)	7265

Requests for these National Occupational Analyses may be forwarded to:

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Human Resources and Social Development Canada
140 Promenade du Portage, Phase IV, 5th Floor
Gatineau, Quebec K1A 0J9

These publications are also available to order or download online at: www.red-seal.ca. Links to Essential Skills Profiles for some of these trades are also available on this website.

STRUCTURE OF ANALYSIS

To facilitate understanding of the occupation, the work performed by tradespersons is divided into the following categories:

Blocks	the largest division within the analysis that is comprised of a distinct set of trade activities
Tasks	distinct actions that describe the activities within a block
Sub-Tasks	distinct actions that describe the activities within a task
Key Competencies	activities that a person should be able to do in order to be called competent in the trade

The analysis also provides the following information:

Context	information to clarify the intent and meaning of tasks
Trends	changes identified that impact or will impact the trade including work practices, technological advances, and new materials and equipment
Related Components	a list of products, items, materials and other elements relevant to the block
Tools and Equipment	categories of tools and equipment used to perform all tasks in the block; these tools and equipment are listed in Appendix A
Required Knowledge	the elements of knowledge that an individual must acquire to adequately perform a task

The appendices located at the end of the analysis are described as follows:

Appendix A — Tools and Equipment	a non-exhaustive list of tools and equipment used in this trade
Appendix B — Glossary	definitions or explanations of selected technical terms used in the analysis
Appendix C — Acronyms	a list of acronyms used in the analysis with their full name
Appendix D — Block and Task Weighting	the block and task percentages submitted by each jurisdiction, and the national averages of these percentages; these national averages determine the number of questions for each block and task in the Interprovincial exam
Appendix E — Pie Chart	a graph which depicts the national percentages of exam questions assigned to blocks
Appendix F — Task Profile Chart	a chart which outlines graphically the blocks, tasks and sub-tasks of this analysis

DEVELOPMENT AND VALIDATION OF ANALYSIS

Development of Analysis

A draft analysis is developed by a committee of industry experts in the field led by a team of facilitators from HRSDC. This draft analysis breaks down all the tasks performed in the occupation and describes the knowledge and abilities required for a tradesperson to demonstrate competence in the trade.

Draft Review

The NOA development team then forwards a copy of the analysis and its translation to provincial and territorial authorities for a review of its content and structure. Their recommendations are assessed and incorporated into the analysis.

Validation and Weighting

The analysis is sent to all provinces and territories for validation and weighting. Participating jurisdictions consult with industry to validate and weight the document, examining the blocks, tasks and sub-tasks of the analysis as follows:

BLOCKS	Each jurisdiction assigns a percentage of questions to each block for an examination that would cover the entire trade.
TASKS	Each jurisdiction assigns a percentage of exam questions to each task within a block.
SUB-TASKS	Each jurisdiction indicates, with a YES or NO, whether or not each sub-task is performed by skilled workers within the occupation in its jurisdiction.

The results of this exercise are submitted to the NOA development team who then analyzes the data and incorporates it into the document. The NOA provides the individual jurisdictional validation results as well as the national averages of all responses. The national averages for block and task weighting guide the Interprovincial Red Seal Examination plan for the trade.

This method for the validation of the NOA also identifies common core sub-tasks across Canada for the occupation. If at least 70% of the responding jurisdictions perform a sub-task, it shall be considered common core. Interprovincial Red Seal Examinations are based on the common core sub-tasks identified through this validation process.

Definitions for Validation and Weighting

YES	sub-task performed by qualified workers in the occupation in a specific jurisdiction
NO	sub-task not performed by qualified workers in the occupation in a specific jurisdiction
NV	analysis Not Validated by a province/territory
ND	trade Not Designated in a province/territory
NOT COMMON CORE (NCC)	sub-task, task or block performed by less than 70% of responding jurisdictions; these will not be tested by the Interprovincial Red Seal Examination for the trade
National Average %	average percentage of questions assigned to each block and task in Interprovincial Red Seal Examination for the trade

Provincial/Territorial Abbreviations

NL	Newfoundland and Labrador
NS	Nova Scotia
PE	Prince Edward Island
NB	New Brunswick
QC	Quebec
ON	Ontario
MB	Manitoba
SK	Saskatchewan
AB	Alberta
BC	British Columbia
NT	Northwest Territories
YT	Yukon Territory
NU	Nunavut

ANALYSIS

SAFETY

Safe working procedures and conditions, accident prevention, and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers and employees. It is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and work environments can be created by controlling the variables and behaviours that may contribute to accidents or injury.

It is generally recognized that safety-conscious attitudes and work practices contribute to a healthy, safe and accident-free work environment.

It is imperative to apply and be familiar with the Occupational Health and Safety (OH&S) Acts and Workplace Hazardous Materials Information System (WHMIS) Regulations. As well, it is essential to determine workplace hazards and take measures to protect oneself, co-workers, the public and the environment.

Safety education is an integral part of training in all jurisdictions. As safety is an imperative part of all trades, it is assumed and therefore it is not included as a qualifier of any activities. However, the technical safety tasks and sub-tasks specific to the trade are included in this analysis.

SCOPE OF THE MOTOR VEHICLE BODY REPAIRER (METAL AND PAINT) TRADE

"Motor Vehicle Body Repairer (Metal and Paint)" is this trade's official Red Seal occupational title approved by the CCDA. This analysis covers tasks performed by a motor vehicle body repairer whose occupational title has been identified by some provinces and territories of Canada under the following names:

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
Auto Body and Collision Damage Repairer						✓							
Auto Body Technician									✓				
Automotive Collision Repair Technician										✓			
Motor Vehicle Body Repairer							✓	✓					✓
Motor Vehicle Body Repairer (Metal and Paint)	✓	✓	✓	✓								✓	
Motor Vehicle Body Repairer - Autobody Refinisher/Repairer											✓		

Motor vehicle body repairers (metal and paint) repair and restore damaged motor vehicles. They assess body damage and make repair estimates. Their repair work may range from correcting minor structural damage and cosmetic scratches and dents to fixing extensive structural damage to motor vehicles. Some parts may need to be removed for access or during repairs. Vehicle parts that are damaged beyond repair are replaced. The alignment and replacement of suspension and steering components may also be a part of this trade. Restoring interior components of vehicles falls within the scope of the trade. They work with electronic components and passenger restraint systems such as seat belts and air bags.

In this sector, most motor vehicle body repairers work in private enterprises or are self-employed. They may be employed by body shops, auto and truck dealerships, custom shops, and trucking and bus companies. In larger shops or dealerships, there may be a division of responsibilities among the team of repair professionals. Some may work exclusively on collision specialization such as damage repair, frame straightening, painting, suspension, detailing, or auto glass installation. Generally in smaller shops, journeypersons tend to be responsible for a wider range of these duties. While they may work as part of the repair team, which includes other motor vehicle body repairers, automotive painters, automotive service technicians, and others in the automotive sector, journeypersons tend to carry out their duties alone.

Motor vehicle body repairers require proficiency with a variety of tools and equipment, some of which are technologically advanced. Hand and power tools are used in the repair and

replacement of motor vehicle parts. Welding, cutting and soldering equipment are also used. Motor vehicle body repairers work with a number of materials such as metal, glass, plastic and composites. Surface repairs may require the application of body fillers. In addition, they may prepare surfaces for refinishing and apply a variety of appropriate refinishing products. They must have refinishing application and detailing skills.

Working environments vary in this trade. Typically, motor vehicle body repairers work indoors in an environment that is noisy and dusty. However, many shops are well ventilated to reduce health risks from dust and fumes. Health and safety are important issues as these workers are frequently in contact with chemicals (e.g. paints, solvents and fillers) and physical hazards (e.g. frame equipment, sharp metal). Ongoing safety training and good safety standards and regulations are important.

Key attributes for people entering this trade are good communication skills, mechanical aptitude, problem solving skills, an eye for detail, computer literacy and a commitment to ongoing training. The work often requires considerable standing, crawling, lifting, climbing, pulling and reaching.

With experience, motor vehicle body repairers may move into supervisory positions, start their own business, or become auto damage appraisers. Some of the skills of this trade may be transferred to other occupations such as sheet metal worker, glazier or automotive service technician.

OCCUPATIONAL OBSERVATIONS

As shops are becoming more environmentally conscious, new volatile organic compound (VOC) regulations are being introduced to protect the environment. The use of waterborne paints will be mandatory. Shops will have to upgrade their equipment to use this improved product. There is also an increase in the recycling of automotive parts, paint materials and paper products.

Dismantling and repair procedure information is more accessible to the repair shop. This ensures that the vehicle is being repaired correctly, in a timely manner and according to the manufacturers' specifications.

Shops are streamlining their operations for easier maintenance, better production and cost efficiency.

Hybrid and alternate fuel vehicles have become more prevalent in the marketplace. This new technology requires motor vehicle body repairers to upgrade their skills. The high voltage produced by these vehicles requires an increase in safety measures.

Technicians must now use computer technology to access repair information, measure dimensions using equipment, mix finishing products to the proper colour and diagnose electronic systems.

New vehicle construction material such as magnesium, aluminium and boron steel are being used; this requires special training and equipment to perform repairs. Specialized inverter resistance welders are necessary to weld some of these new materials.

There is an increase in the use of aluminium, plastic and composite type materials, largely because of weight reduction and the resulting fuel economy and environmental concerns.

BLOCK A OCCUPATIONAL SKILLS

Context

This block lists the many occupational skills that are necessary to ensure the tasks of this trade are performed in a safe, effective and efficient manner. Quality assurance is critical throughout the repair process.

Trends

There is an increase in the use of computers for parts management, paint mixing and inventory of paint and materials.

Due to the number of electronic controls in vehicles, diagnostic tools are increasing in use.

Information regarding all procedures and specifications is more accessible due to use of computers and internet.

Related Components (include, but not limited to)

All components apply.

Tools and Equipment

See Appendix A.

Task 1 Uses documentation.

Required Knowledge

K 1	sources of specifications and information
K 2	industry terminology
K 3	vehicle construction
K 4	estimate formats
K 5	work order formats
K 6	location of safety and environmental regulations
K 7	applicable repair procedure documents
K 8	WHMIS and Material Safety Data Sheet (MSDS)
K 9	OH&S

Sub-task

A-1.01 **Uses manufacturers' specifications and repair procedures.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-1.01.01	locate and access documentation such as printed and electronic materials
A-1.01.02	interpret documents such as repair procedures, specifications and environmental regulations
A-1.01.03	follow and apply information found in documentation
A-1.01.04	refer to tool and equipment operation manuals

Sub-task

A-1.02 **Interprets estimates.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-1.02.01	verify vehicle and customer information
A-1.02.02	identify repairs required according to the estimate to verify procedure and time required
A-1.02.03	identify additional components and damages missed on original estimate to complete repair

---

Sub-task

A-1.03 **Uses work orders.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-1.03.01	follow instructions on work order
A-1.03.02	refer to work order to obtain information on vehicle and to plan the tasks
A-1.03.03	record parts, sublets and labour applied to tasks

A-1.03.04	summarize tasks that have been completed
A-1.03.05	submit work orders to administration for billing purposes

---

Sub-task

A-1.04 **Interprets safety and environmental regulations.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-1.04.01	locate and access regulation documentation such as WHMIS and MSDS, occupational health and safety information and company policies
A-1.04.02	follow governmental safety regulations to enforce safety procedures within the shop
A-1.04.03	locate and access safety and first aid materials
A-1.04.04	interpret safety symbols such as on corrosive, explosive, pressurized and poisonous materials

Task 2 Uses and maintains tools and equipment.

Required Knowledge

K 1	types of hand tools such as removal and installation, bumping and straightening, sanding and material application tools
K 2	types of power tools such as pneumatic, electric and hydraulic
K 3	maintenance schedules for equipment such as hoists and spray booths
K 4	operating procedures for tools and equipment
K 5	types of welding equipment such as oxy-fuel, Gas Metal Arc Welding (GMAW [MIG]), inverter spot welders and plastic welders
K 6	welding consumable materials such as welding wire, shield gases and tips
K 7	types of straightening equipment such as floor-mounted and portable benches
K 8	vehicle construction
K 9	types of lifting equipment such as hoists, jack stands, floor jacks and door jacks
K 10	applications and limitations of lifting equipment

K 11	certification requirements of lifting equipment and operators
K 12	types of measuring equipment such as trams, centering gauges and lasers
K 13	limitations of measuring equipment
K 14	air pressures
K 15	types of refinishing tools and equipment
K 16	types of paint systems
K 17	types of personal protective equipment (PPE) used for welding, cutting and refinishing
K 18	types of PPE such as hearing, eye, skin and breathing protection
K 19	PPE operations
K 20	workplace safety and health regulations

Sub-task

A-2.01 **Maintains hand tools.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-2.01.01	clean hand tools to ensure proper operation and to prevent transfer of contaminates to vehicle
A-2.01.02	lubricate hand tools such as wrenches, ratchets, pliers and pop riveters
A-2.01.03	check tools for damage, excess wear and proper operation
A-2.01.04	store hand tools to organize and secure tools

Sub-task

A-2.02 **Maintains power tools.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-2.02.01	lubricate power tools according to manufacturers' specifications
A-2.02.02	adjust power tools such as air and hydraulic tools
A-2.02.03	check tools for wear, damage and malfunction

A-2.02.04	follow recommended maintenance limitations on air, hydraulic and electric tools
A-2.02.05	check and empty water separators on air lines to avoid conditions such as corrosion, and to prevent premature failure and contamination
A-2.02.06	drain compressors of water and moisture in tank to prevent water from entering air lines
A-2.02.07	store power tools to organize and secure

Sub-task

A-2.03 **Maintains welding equipment.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-2.03.01	maintain components such as gauges, tips, coolant, nozzles, regulators, flow meters and hoses
A-2.03.02	check equipment for damage, wear and missing parts
A-2.03.03	ensure tanks are secured to prevent accidental damage to equipment
A-2.03.04	avoid contamination of oxy-fuel equipment
A-2.03.05	check tension on drive rollers to ensure that wire is fed correctly
A-2.03.06	check wire liner for wear and contamination
A-2.03.07	vacuum out the interior of a MIG welder machine

Sub-task

A-2.04 **Maintains frame and unibody repair equipment.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-2.04.01	check components such as chains, clamps, hooks, fixtures and anchor pots for damage, wear and missing parts
A-2.04.02	check level of hydraulic fluids to ensure full extension and capability
A-2.04.03	check air pressure to avoid premature damage to equipment
A-2.04.04	clean equipment to ensure smooth operation

A-2.04.05	lubricate equipment as required
A-2.04.06	store and secure mobile frame and unibody repair equipment

---

Sub-task

A-2.05 **Uses lifting equipment.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-2.05.01	identify lifting points of vehicle to avoid damage to hoist and vehicle
A-2.05.02	select lifting equipment according to vehicle and required repair
A-2.05.03	operate equipment within operating limitations
A-2.05.04	maintain equipment to ensure that certification is current
A-2.05.05	check safety backups such as hoist locks, safety tabs and height limiter switch
A-2.05.06	check components such as pads, levers, cables and arm locks for proper operation
A-2.05.07	operate door jack to avoid damage to door and vehicle, and injury to repairer

---

Sub-task

A-2.06 **Maintains measuring equipment.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-2.06.01	calibrate equipment such as tram gauges, centering gauges and laser equipment to ensure accurate measurements
A-2.06.02	check for wear and damage and remove from service if necessary
A-2.06.03	clean and store equipment to prevent damage while not in use
A-2.06.04	update equipment software to current specifications on electronic measuring systems

Sub-task

A-2.07 **Maintains refinishing tools and equipment.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-2.07.01	clean and maintain spray booth according to manufacturers' specifications
A-2.07.02	clean spray guns after every application
A-2.07.03	lubricate spray gun components with paint-compatible lubricant
A-2.07.04	check air dryers and filters for contamination and moisture
A-2.07.05	calibrate refinishing material mixing scales
A-2.07.06	maintain mixing equipment and paint mixing room
A-2.07.07	maintain spray gun cleaners and recycling equipment
A-2.07.08	troubleshoot spray gun equipment to check for and correct malfunctions

---

Sub-task

A-2.08 **Uses personal protective equipment (PPE).**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-2.08.01	select and use PPE required for task such as non-static overalls, hearing protection, fresh air supplied respirators, solvent-resistant gloves, welding jacket and eye protection
A-2.08.02	inspect and maintain PPE to ensure it is ready to use
A-2.08.03	store PPE such as respirators, coveralls and other non-disposable items
A-2.08.04	check operation of PPE prior to use

Task 3 — Organizes work.

Required Knowledge

K 1	vehicle construction
K 2	industry terminology
K 3	repair procedures
K 4	parts and materials
K 5	WHMIS and MSDS and their locations
K 6	OH&S
K 7	PPE
K 8	workers' rights and responsibilities
K 9	location of safety equipment such as eye wash station, fire fighting equipment and first aid kit
K 10	emergency procedures
K 11	safe disposal and recycling procedures
K 12	jurisdictional disposal and recycling regulation

Sub-task

A-3.01 **Follows safety procedures for alternate-fuel vehicles.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-3.01.01	refer to manufacturers' safety procedures prior to working on alternate-fuel vehicles
A-3.01.02	deactivate battery packs on hybrid vehicles to prevent damage to vehicle and injury to repairers
A-3.01.03	follow refinishing procedures for curing cycles for alternate-fuel vehicles
A-3.01.04	determine PPE required for task

Sub-task

A-3.02 **Prepares damage estimate.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-3.02.01	record information such as customer, vehicle identification number (VIN), make and model, and colour codes
A-3.02.02	visually assess damage to vehicle to document repair required
A-3.02.03	photograph vehicle as required
A-3.02.04	complete written estimate of damage by listing parts, materials and labour required for repair
A-3.02.05	dismantle vehicle to access and assess hidden damage after obtaining permission

Sub-task

A-3.03 **Organizes replacement parts and materials.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-3.03.01	verify that necessary parts and materials are available for task such as fasteners and retainers
A-3.03.02	notify supervisor of missing, damaged and incorrect parts
A-3.03.03	store small parts to ensure they are not lost
A-3.03.04	inspect and prepare parts prior to installation

Sub-task

A-3.04 **Communicates with others.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-3.04.01	use understandable trade-related terminology for effective communication with other repairers
A-3.04.02	request assistance from others when needed
A-3.04.03	explain technical information in plain language to office staff and customers
A-3.04.04	communicate with related professionals such as appraisers, partspersons and automotive painters
A-3.04.05	guide and instruct apprentices to pass along knowledge and skills
A-3.04.06	operate communication equipment

Sub-task

A-3.05 **Prepares work area.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-3.05.01	ensure that work area is clear and clean before starting vehicle repair using methods such as hosing down, and using pressurized air and squeegee
A-3.05.02	select and bring tools and equipment to work area
A-3.05.03	set up portable drying equipment to speed up curing process

Sub-task

A-3.06 **Maintains safe work environment.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-3.06.01	keep shop clean and organized
A-3.06.02	recognize and eliminate fire hazards such as contaminated rags and build up of vapours
A-3.06.03	recognize and eliminate hazardous conditions such as fumes, lack of grounding and static electricity
A-3.06.04	record disposal of hazardous materials such as waste thinners, paints and oils
A-3.06.05	recognize and eliminate personal injury hazards such as sparks, static electricity and sharp metal
A-3.06.06	perform basic first aid
A-3.06.07	identify types of fire extinguishers
A-3.06.08	locate and use fire extinguishers, first aid kits and eye wash stations

Task 4 Applies corrosion protection material.

Required Knowledge

K 1	vehicle construction and material types
K 2	types of corrosion protection material
K 3	where and when to apply various inhibiters
K 4	application procedures
K 5	vehicle electrical systems and components
K 6	corrosion inhibitors such as undercoating, weld-through primers and etch primers

Sub-task

A-4.01 **Applies weld-through primer.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-4.01.01	check Original Equipment Manufacturer's (OEM) specifications for recommendations for use
A-4.01.02	prepare surface before applying weld-through primer between adjoining surfaces
A-4.01.03	apply primer before panels are welded together

Sub-task

A-4.02 **Applies corrosion protection for electrical components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-4.02.01	recognize where protection is required such as on grounding and reconnections
A-4.02.02	apply heat shrink tubing to repairs to protect electrical connection and ensure moisture-free environment
A-4.02.03	apply dielectric grease to electrical components according to vehicle manufacturers' specifications
A-4.02.04	ensure that rubber seals for connections are not missing or damaged

Sub-task

A-4.03 **Applies corrosion inhibitors and sealers.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-4.03.01	identify areas subject to corrosion such as limited access panels, rocker panels, frame rails and repair zone
A-4.03.02	spray inhibitors inside panels to provide additional corrosion protection
A-4.03.03	protect surrounding areas such as fibreglass components from unwanted inhibitors
A-4.03.04	remove excess inhibitors from surrounding area after application
A-4.03.05	apply body sealers to seams and panels

Task 5 Repairs and replaces trim, body seals and gaskets.

Required Knowledge

K 1	vehicle construction
K 2	types and composition of trim
K 3	trim function
K 4	fastening systems such as clips, adhesives and screws
K 5	repair materials and equipment

Sub-task

A-5.01 **Removes trim, body seals and gaskets.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-5.01.01	recognize material composition to avoid damage during removal process
A-5.01.02	select and use tools and equipment such as teflon blades, utility knives, clip remover and heat gun
A-5.01.03	remove retainers and identify reusable parts
A-5.01.04	remove adhesive residue prior to repairs and refinishing
A-5.01.05	refer to manufacturers' specification for removal

Sub-task

A-5.02 **Repairs trim.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-5.02.01	identify trim that can be repaired
A-5.02.02	identify trim composition and repair procedure
A-5.02.03	select and use tools, equipment and materials
A-5.02.04	refinish repaired trim

Sub-task

A-5.03 **Installs trim, body seals and gaskets.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-5.03.01	clean panel and ensure it is free of contaminants to ensure adhesion
A-5.03.02	select and use tools, equipment and primer
A-5.03.03	reapply mechanical fasteners such as retainers, screws and clips

A-5.03.04	apply adhesives such as double-sided tape, sprays and emblem adhesive to trim
A-5.03.05	align to ensure correct placement

Task 6 Performs final check.

Required Knowledge

K 1	vehicle construction and components
K 2	panel alignment and fit
K 3	components' operation
K 4	road test procedures
K 5	types of defects such as wind noise, water leaks and rattles
K 6	electrical components reset

Sub-task

A-6.01 Inspects vehicle visually.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-6.01.01	check vehicle for conditions such as trim alignment, vehicle cleanliness, colour match and panel fit
A-6.01.02	perform final visual inspection to ensure that vehicle is returned to pre-accident condition
A-6.01.03	check all affected fluid levels to ensure that there are no visible leaks

Sub-task

A-6.02 **Performs final operational check.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

A-6.02.01	check operation of all components that were repaired and replaced
A-6.02.02	perform road test, according to the extent of repair, to ensure that vehicle is returned to pre-accident condition
A-6.02.03	complete final delivery check list

BLOCK B — FRAME AND STRUCTURAL COMPONENTS

Context

The frame and structural components, on which all other components of the vehicle are installed, provide vehicles with strength and structural integrity. They must be repaired or replaced to exacting tolerances and specifications.

Safety is very important when operating frame straightening equipment.

Trends

There are new materials being introduced that make the construction of vehicles stronger and lighter.

New body construction procedures such as hydroforming and laser welding are being introduced to the trade and are resulting in new repair procedures.

Related Components (include, but not limited to)

Structural components: engine compartment, sub-frames, frame rails, rocker panels, engine cradles, A, B, and C pillars, moveable panel openings, passenger compartment, luggage compartment, structural glass, structural outer panels.

Non-structural components: non-structural outer panels, trim, fascias and interior components.

Tools and Equipment

See Appendix A.

Task 7 — Prepares for repair and replacement of structural components.

Required Knowledge

K 1	anchoring techniques for vehicle types such as unibody or frame
K 2	anchoring equipment
K 3	basic mathematics
K 4	removal procedures
K 5	types of damage
K 6	structural component composition such as high tensile steel, aluminium, magnesium and fibre-reinforced composite

K 7	manufacturers' specifications for structural dimensions
K 8	measuring equipment and techniques
K 9	differences between structural and non-structural components
K 10	point and direction of impact

Sub-task

B-7.01 **Performs vehicle setup.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

B-7.01.01	select and use tools and equipment
B-7.01.02	refer to manufacturers' specifications to identify measurements
B-7.01.03	remove components such as body cladding and rocker panel mouldings
B-7.01.04	identify vehicle anchoring points for clamps and fixtures to secure vehicle prior to repair
B-7.01.05	anchor vehicle to structural repair device such as frame straightening equipment and bench

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Sub-task

B-7.02 **Removes components for access.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

B-7.02.01	identify components that need to be removed such as outer body panels, suspension components and wiring harnesses
B-7.02.02	select and use tools and equipment for component removal such as engine lifts, pullers and spring compressors
B-7.02.03	label, organize and store removed components for reassembly

Sub-task

B-7.03 **Identifies extent of damage.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

B-7.03.01	visually inspect components to identify obvious damage
B-7.03.02	select and use tools and equipment such as tram gauge, centering gauge and electronic measuring systems
B-7.03.03	take measurements of structural components
B-7.03.04	verify measurements using manufacturers' specifications

Task 8 Repairs and replaces structural components.

Required Knowledge

K 1	vehicle construction
K 2	removal procedures
K 3	repair procedures
K 4	installation procedures
K 5	manufacturers' specifications
K 6	measuring techniques
K 7	allowable tolerances
K 8	types of materials
K 9	reusable and non-reusable fasteners and components
K 10	types of welding processes such as oxy-fuel, GMAW (MIG), inverter spot and plastic welding
K 11	welding consumable materials such as welding wire, shield gases and tips

Sub-task

B-8.01 **Straightens structural components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

B-8.01.01	select and use straightening tools and equipment
B-8.01.02	identify materials and composites using methods such as grinding, magnetism and scratch testing
B-8.01.03	fasten straightening equipment such as clamps, pullers and hooks
B-8.01.04	perform recommended stress relief techniques to assist in straightening and to achieve manufacturers' specifications
B-8.01.05	monitor repair by taking ongoing measurements

Sub-task

B-8.02 **Removes structural components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

B-8.02.01	select and use tools and equipment
B-8.02.02	remove fasteners such as adhesives, nuts and bolts
B-8.02.03	identify areas for sectioning using manufacturers' specifications
B-8.02.04	remove spot welds in pre-determined areas by drilling or grinding
B-8.02.05	cut components using tools and equipment such as cut-off wheels, plasma cutters and saws

Sub-task

B-8.03 **Installs structural components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

B-8.03.01	select and use tools and equipment for installation
B-8.03.02	prepare structural components using procedures such as cleaning, grinding, and drilling holes for spot welds
B-8.03.03	perform initial fastening of component to verify alignment and fit using methods such as tack welding, bolting and clamping
B-8.03.04	monitor installation by taking ongoing measurements and test fitting outer body components
B-8.03.05	perform final fastening procedures such as welding, bolting, and bonding and riveting

BLOCK C NON-STRUCTURAL OUTER BODY PANELS

Context	Non-structural outer body panels are cosmetic panels that do not relate to the structure of the vehicle and are generally mechanically affixed to the vehicle structure. These panels are made of various materials such as aluminium, plastic, mild steel and composite materials. Motor vehicle body repairers are required to repair or replace damaged panels to pre-accident condition.
Trends	Materials used in the construction of vehicles are constantly changing. There are fewer repairs done on non-structural parts; more replacements are being performed.
Related Components (include, but not limited to)	Finish panels, panel extensions, door shells, door repair panels, roof panels, fenders, hood panels, bumpers, luggage lids, quarter panel, rocker panel, screws, bolts, nuts, clips, trim, electrical components.
Tools and Equipment	See Appendix A.

Task 9 Repairs panels.

Required Knowledge

K 1	types of repair materials and their properties
K 2	repair procedures for various panels and materials
K 3	cleaning products
K 4	abrasives and chemical strippers
K 5	types and severity of damage such as stretches, buckles and tears
K 6	reshaping procedures such as heating, cold repair and pushing/pulling
K 7	alignment sequence
K 8	application procedures

Sub-task

C-9.01 **Prepares panels for repair.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

C-9.01.01	clean panel using products such as soap and water, and solvent-based cleaners
C-9.01.02	inspect panel visually and by touch to identify damage
C-9.01.03	select and use tools and equipment
C-9.01.04	remove components or panel to access damaged area if required
C-9.01.05	protect surrounding area and unrelated components from further damage such as sparks, grinding marks and overspray

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Sub-task

C-9.02 **Reshapes panels.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

C-9.02.01	select and use tools and equipment such as grinder, sander and straightening equipment
C-9.02.02	repair panel using techniques such as hammer/dolly, cold shrinking, heat shrinking and welding
C-9.02.03	inspect panel visually and by touch to verify panel shape

Sub-task

C-9.03 **Aligns panels.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

C-9.03.01	select and use tools and equipment
C-9.03.02	visually identify extent of panel misalignment
C-9.03.03	identify fastening material such as bolts, adhesive and rivets
C-9.03.04	loosen panel to align
C-9.03.05	refasten panel to manufacturers' specifications
C-9.03.06	inspect panel visually and by touch to verify panel alignment and operation

Sub-task

C-9.04 **Applies repair materials.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

C-9.04.01	remove contaminants from repaired area
C-9.04.02	prepare panel using techniques such as grinding, sanding and applying adhesion promoter prior to application of repair material
C-9.04.03	select repair material such as fillers, epoxies and adhesives
C-9.04.04	prepare repair material for application according to product's specification
C-9.04.05	fill repair area using methods such as spray, spread and using applicators

Sub-task

C-9.05 **Shapes repair materials.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

C-9.05.01	select and use tools and equipment such as sanding blocks, files and air tools
C-9.05.02	sand or file repair material to required shape
C-9.05.03	inspect repair material visually and by touch to identify deficiencies such as pin holes, sand scratches and low/high spots and to determine if reapplication of repair material is required

Task 10 Replaces panels.

Required Knowledge

K 1	removal procedures
K 2	abrasives and cleaners
K 3	fastening procedures
K 4	methods for fastening a panel for test fitting
K 5	vehicle construction
K 6	bonding materials and their properties
K 7	welding equipment and techniques for various materials

Sub-task

C-10.01 **Removes panels.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

C-10.01.01	identify fastening materials such as bolts, adhesives, spot welds and rivets
C-10.01.02	select and use tools and equipment
C-10.01.03	protect or remove components and adjacent panels
C-10.01.04	remove fastening material, sealers and damaged panel

Sub-task

C-10.02 **Installs panels.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

C-10.02.01	select and use tools and equipment
C-10.02.02	test fit panels to ensure alignment
C-10.02.03	prepare common surfaces using methods such as cleaning, media blasting and grinding
C-10.02.04	fasten panel according to manufacturers' specifications
C-10.02.05	verify fit and operation with adjacent panels and components
C-10.02.06	apply required sealers

BLOCK D — GLASS

Context	There are two forms of glass: structural and non-structural. Structural glass provides structural integrity to the vehicle or to the attaching components. Non-Structural glass is usually located in doors and side panels. It may be movable or fixed. For safety and comfort, cracks, chipped or broken glass need to be repaired or replaced. In some applications, glass needs to be removed and reinstalled to facilitate repair of surrounding components.
Trends	Due to consumer demands, there is an increase in the use of glass for options such as roofs and sun roofs. Other options such as heated glass, heads-up displays and rain sensors are available. There is an increase in the use of non-glass material for windows due to weight reduction and safety.
Related Components (include, but not limited to)	Windshield, side glass, back glass, sun roof, interior and exterior trim, glass hardware, wipers, antennas, electric defrost, mirrors, sensors.
Tools and Equipment	See Appendix A.

Task 11 — Replaces structural glass.

Required Knowledge

K 1	types of structural glass such as tempered and laminated
K 2	structural glass removal and installation tools and techniques
K 3	structural glass applications
K 4	bonding and priming material specifications such as expiry date and drying times
K 5	types of bonding materials
K 6	structural glass handling techniques
K 7	structural glass identification such as National Auto Glass Society (NAGS) and OEM

K 8	structural glass options such as antenna, heated glass, rain sensors and heads-up display
K 9	types of repair equipment
K 10	types of trim, mouldings and components

Sub-task

D-11.01 **Removes structural glass.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

D-11.01.01	select and use tools and equipment such as cold knives, suction cups and electrical cut-out knives
D-11.01.02	prepare and protect surrounding area
D-11.01.03	cut urethane to remove glass
D-11.01.04	dispose of or store glass according to shop procedures

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Sub-task

D-11.02 **Installs structural glass.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	no	NV	NV	NV

Key Competencies

D-11.02.01	select and use tools and equipment
D-11.02.02	prepare pinch weld using methods such as cutting old urethane and cleaning
D-11.02.03	inspect pinch weld for conditions such as damage, corrosion and defects
D-11.02.04	test fit glass in opening and check for defects
D-11.02.05	prepare glass according to manufacturers' specifications
D-11.02.06	apply primer and urethane
D-11.02.07	insert glass in opening and verify alignment
D-11.02.08	secure glass in place to avoid movement until urethane is set
D-11.02.09	verify installation of glass to detect conditions such as water leaks and wind noise
D-11.02.10	verify operation of electrical components such as heated glass, sensors and wipers

Sub-task

D-11.03 **Repairs laminated glass.**
(NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	yes	no	no	yes	yes	yes	no	no	NV	NV	NV

Key Competencies

D-11.03.01	select and use tools and equipment
D-11.03.02	inspect windshield visually to determine reparability
D-11.03.03	drill outer layer of windshield if necessary
D-11.03.04	apply vacuum to remove air and moisture
D-11.03.05	inject repair adhesive into the chip
D-11.03.06	cure adhesive with ultraviolet light
D-11.03.07	remove excess adhesive
D-11.03.08	visually verify repair

Task 12 Replaces non-structural glass.

Required Knowledge

K 1	types of non-structural glass
K 2	removal techniques
K 3	component operation
K 4	types of fasteners
K 5	location and removal techniques of broken glass
K 6	safety equipment and procedures
K 7	hardware components such as regulators, window guides, channel guides and latches

Sub-task

D-12.01 **Removes non-structural glass.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

D-12.01.01	select and use tools and equipment
D-12.01.02	access hardware and position glass for removal
D-12.01.03	identify and remove fasteners such as pressure clips, mechanical clips, rivets and bolts
D-12.01.04	extract glass from vehicle
D-12.01.05	inspect vehicle for damage and vacuum all areas such as seat, seat belt retractors, window regulators, heating and cooling vents, and door panels for broken glass
D-12.01.06	dispose of or store glass according to shop procedures

Sub-task

D-12.02 **Installs non-structural glass.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

D-12.02.01	select and use tools, equipment, hardware and fasteners according to manufacturers' specifications
D-12.02.02	inspect glass for defects such as scratches, chipped edges and pitting
D-12.02.03	insert glass in opening and attach with applicable hardware and fasteners
D-12.02.04	verify fit and operation of glass

BLOCK E MECHANICAL AND ELECTRICAL COMPONENTS

Context	Mechanical and electrical components are found everywhere in today's motor vehicle. Motor vehicle body repairers require the knowledge of the operation and purpose of these components to fully remove, repair and replace them safely and to manufacturers' specifications.
Trends	There are more wiring and electrical components in vehicles. Different types of wiring have been introduced in the market to operate various components such as computers, sensors, global positioning systems (GPS) and cameras. New mechanical components are being made lighter for better operation. Electronic control systems are increasingly used in modern vehicles.
Related Components (include, but not limited to)	Suspension/steering system components, drive train components, exhaust system components, air intake system components, fuel system components, heating/cooling system components, braking system components, electrical components and accessories.
Tools and Equipment	See Appendix A.

Task 13 Repairs and replaces mechanical components.

Required Knowledge

K 1	manufacturers' removal and replacement procedures
K 2	types of mechanical components
K 3	component material
K 4	cleaners and cleaning procedures
K 5	manufacturers' specifications

Sub-task

E-13.01 **Removes mechanical components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

E-13.01.01	determine removal procedure and components to be removed according to manufacturers' specifications
E-13.01.02	select and use tools and equipment
E-13.01.03	label, organize and store components to facilitate reassembly
E-13.01.04	inspect components surrounding damage visually, by touch and by measuring to identify conditions such as scaled rust, bends and twists

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Sub-task

E-13.02 **Cleans mechanical components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

E-13.02.01	select and use cleaning solutions such as soap and water, degreaser and mild solvents
E-13.02.02	select and use tools and equipment such as rags, brushes and compressed air guns
E-13.02.03	determine when parts are reusable

Sub-task

E-13.03 **Straightens mechanical components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	no	NV	NV	NV

Key Competencies

E-13.03.01	determine reparability of components according to manufacturers' specifications
E-13.03.02	select and use tools and equipment
E-13.03.03	repair mechanical components such as window regulators, door latches and exhaust systems
E-13.03.04	confirm repair of components by measurement, and visual and operational checks

Sub-task

E-13.04 **Installs mechanical components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

E-13.04.01	determine installation sequence according to manufacturers' specifications
E-13.04.02	determine reusability of fasteners according to manufacturers' specifications
E-13.04.03	verify that all components are correct and on hand
E-13.04.04	select and use tools and equipment
E-13.04.05	lubricate components as required
E-13.04.06	assemble mechanical components prior to installation as required
E-13.04.07	reinstall mechanical components according to manufacturers' specifications such as torque specifications and measurement tolerances when applicable
E-13.04.08	verify final installation by checking operation

Task 14 Repairs and replaces electrical components.

Required Knowledge

K 1	types of wires and coverings
K 2	testing equipment such as voltmeters and test lights
K 3	types of corrosion inhibitors
K 4	cleaning tools and materials
K 5	types of connectors
K 6	reusability of coverings
K 7	component operation
K 8	removal procedures such as cutting, dismantling and disconnecting
K 9	manufacturers' requirements for installation of components such as computers, air bags, antilock brake systems (ABS), proximity sensors and on-board cameras

Sub-task

E-14.01 Repairs damaged wires and exterior coverings.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

E-14.01.01	determine if wires and coverings are repairable
E-14.01.02	select and use tools and equipment such as soldering irons, voltmeters and test lights
E-14.01.03	remove components and exterior coverings as required to access wiring
E-14.01.04	determine repair methods and materials such as solder, shrink tubes and solderless connectors
E-14.01.05	reapply corrosion protection material
E-14.01.06	complete wire repair and replace exterior coverings
E-14.01.07	verify operation of electrical components

Sub-task

E-14.02 **Cleans corroded components and connections.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

E-14.02.01	determine if components can be cleaned
E-14.02.02	select and use cleaning supplies and materials such as rags, electrical cleaners and abrasives
E-14.02.03	verify operation of related components

Sub-task

E-14.03 **Removes damaged electrical components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

E-14.03.01	identify electrical system
E-14.03.02	select and use tools and equipment such as high voltage gloves and voltmeter
E-14.03.03	disconnect battery and allow time for charge dissipation if required
E-14.03.04	access components according to manufacturers' specifications
E-14.03.05	label, handle and store components in a safe manner
E-14.03.06	dispose of components according to jurisdictional environmental requirements

Sub-task

E-14.04 **Installs electrical components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

E-14.04.01	select and use tools and equipment
E-14.04.02	inspect installation area to identify additional damage
E-14.04.03	prepare installation area such as removing surrounding components and contaminants
E-14.04.04	verify if all components are correct and on hand
E-14.04.05	lubricate and seal components as required
E-14.04.06	assemble electrical components prior to final installation as required
E-14.04.07	reinstall components according to manufacturers' specifications
E-14.04.08	verify final installation by checking operation

BLOCK F RESTRAINT SYSTEM AND INTERIOR COMPONENTS

Context	Motor vehicle body repairers install, replace and repair restraint systems and interior components such as air bags, seats and seat belts in a safe and systematic way in order to bring the interior of the vehicle back to its original condition.
Trends	Air bags and seat belt restraints have become more of an integrated system. There is more replacement of trim, air bags and related components due to increased air bag deployment locations.
Related Components (include, but not limited to)	**Interior components:** seats, steering wheel, dash, instrument panel, console, headliner, door panels, visor, carpet, locks, switches, A, B and C pillar trim, stereo, sun roof, child seat anchors, luggage nets, spare tire, steering column and intermediate shaft, accessories. **Seat belt restraint systems**: seat belts, trim, seats, doors, pillars, wiring, anchoring points, seat belt pre-tensioners. **Air bag systems:** air bags, modules, clock spring, sensors, connectors, steering wheel, seats, dash, door panels, windshield, interior trim, wiring, headliner.
Tools and Equipment	See Appendix A.

Task 15 Repairs and replaces interior components.

Required Knowledge

K 1	types of interior components
K 2	removal and installation sequence
K 3	types of fasteners
K 4	component composition
K 5	repair products and manufacturers' procedures
K 6	interior electrical components and battery
K 7	interior mechanical components

Sub-task

F-15.01 **Removes interior components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

F-15.01.01	disconnect battery
F-15.01.02	identify types of fasteners
F-15.01.03	identify and follow removal sequence of interior components
F-15.01.04	select and use removal tools and equipment such as pullers, screwdrivers and clip removers
F-15.01.05	follow procedures for handling and storing interior components
F-15.01.06	label, organize and store components for reassembly

Sub-task

F-15.02 **Repairs interior components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

F-15.02.01	troubleshoot interior component problems
F-15.02.02	identify type of material
F-15.02.03	identify sequence of repair
F-15.02.04	clean components to facilitate repair
F-15.02.05	select and use repair materials and equipment such as plastic welding equipment and epoxies

Sub-task

F-15.03 **Installs interior components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

F-15.03.01	select and use installation tools and equipment
F-15.03.02	identify and follow sequence of installation of components
F-15.03.03	secure interior components using fasteners
F-15.03.04	connect all electrical components and reconnect battery
F-15.03.05	complete installation by verifying operation

Task 16 Replaces seat belt restraint systems.

Required Knowledge

K 1	types of seat belt restraint systems such as active and passive
K 2	mounting hardware
K 3	hardware removal procedures
K 4	manufacturers' specifications and installation procedures
K 5	electrical connections

Sub-task

F-16.01 **Removes seat belt restraint systems.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

F-16.01.01	identify types of seat belt restraint systems such as passive and active
F-16.01.02	select and use tools and equipment
F-16.01.03	disconnect battery if required
F-16.01.04	identify and follow removal sequence of components according to manufacturers' specifications

F-16.01.05	check for secondary damage to surrounding components
F-16.01.06	label, organize and store seat belt components

Sub-task

F-16.02 **Installs seat belt restraint systems.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

F-16.02.01	select and use tools and equipment
F-16.02.02	install components following manufacturers' specifications and procedures
F-16.02.03	connect all electrical components and reconnect battery if required
F-16.02.04	verify seat belt installation and operation
F-16.02.05	clear any supplemental restraint system (SRS) service codes

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Task 17 Replaces air bag systems.

Required Knowledge

K 1	manufacturers' specifications and removal procedures
K 2	air bag removal, disposal and handling hazards
K 3	types of air bag components such as control modules and clock springs
K 4	electrical systems
K 5	air bag self-diagnostic system

Sub-task

F-17.01 **Removes air bags and related components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

F-17.01.01	select and use tools and equipment
F-17.01.02	disconnect battery and allow time for charge dissipation
F-17.01.03	identify hazards and take precautionary measures during air bag removal
F-17.01.04	remove components such as sensors, modules and bumpers according to manufacturers' specifications and procedures
F-17.01.05	label, handle, organize and store air bag components according to procedures
F-17.01.06	check for secondary damage to surrounding components

Sub-task

F-17.02 **Installs air bags and related components.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

F-17.02.01	select and use tools and equipment
F-17.02.02	identify hazards and take precautionary measures during air bag installation
F-17.02.03	determine location and alignment of components
F-17.02.04	install components according to manufacturers' specifications and procedures
F-17.02.05	install related electrical connections and components
F-17.02.06	reconnect battery
F-17.02.07	verify installation and operation of air bag system and components
F-17.02.08	clear any SRS service codes

BLOCK G REFINISHING

Context	Motor vehicle body repairers prepare surfaces, and mix and apply refinishing materials to achieve pre-accident finish on interior or exterior body panels or components.
Trends	The transition to waterborne paints and cleaners has affected the application procedure and the use of drying equipment and techniques. Lower VOC clear coats are more frequently used.
Related Components (include, but not limited to)	Interior and exterior body panels and components.
Tools and Equipment	See Appendix A.

Task 18 Prepares surfaces.

Required Knowledge

K 1	types of contaminants such as tar, sap, wax, oil, grease and industrial fallout
K 2	procedures for handling contaminants and cleaning materials
K 3	abrasive products
K 4	cleaning materials such as solvents and rubbing compounds
K 5	masking materials such as tape, paper, plastic sheeting, liquid mask and foam tapes
K 6	sanding and masking techniques
K 7	refinishing products
K 8	types of substrate

Sub-task

G-18.01 **Decontaminates area.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

G-18.01.01	select cleaning tools and products for application
G-18.01.02	perform preliminary cleaning of area with soap and water
G-18.01.03	use solvents and cleaners according to safety procedures and protocols to remove wax, oil, greases or other contaminants
G-18.01.04	ensure that surface is thoroughly cleaned and dried

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Sub-task

G-18.02 **Sands surfaces.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

G-18.02.01	select and use materials and tools for application
G-18.02.02	prepare surface according to manufacturers' specifications and recommendations
G-18.02.03	protect adjacent panels using products such as masking tape and car covers
G-18.02.04	perform sanding techniques to acquire desired finish
G-18.02.05	ensure that work area is thoroughly clean, free of dust and dry

Sub-task

G-18.03 **Masks off surrounding area.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

G-18.03.01	select masking tools and materials for application
G-18.03.02	apply masking materials such as spray mask, wheel covers, masking tape and paper to protect surrounding areas from overspray

Task 19 Prepares and applies refinishing materials.

Required Knowledge

K 1	types of refinishing materials such as primers, sealers, basecoats and topcoats
K 2	manufacturers' specifications such as mixing ratios
K 3	tinting procedures
K 4	product quality maintenance procedures
K 5	mixing hazards
K 6	types of contaminants
K 7	types of cleaning products
K 8	spraying techniques
K 9	product specifications such as drying and flash times
K 10	types of masking material
K 11	unmasking techniques and time line limitations for mask removal
K 12	paint mixing software and equipment
K 13	paint application equipment and tools such as paint guns and paint booths
K 14	PPE
K 15	disposal of refinishing materials
K 16	WHMIS and MSDS
K 17	OH&S

Sub-task

G-19.01 **Mixes refinishing materials.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

G-19.01.01	ensure that area is clean and well ventilated
G-19.01.02	select and use PPE
G-19.01.03	identify and locate vehicle paint codes
G-19.01.04	access paint mixture information from colour manuals or paint mixing software
G-19.01.05	mix paint following paint mixture formula to obtain desired colour
G-19.01.06	reduce paint following manufacturers' recommended paint reduction formula
G-19.01.07	strain paint to eliminate contaminants as necessary

Sub-task

G-19.02 **Performs final wash and tack.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

G-19.02.01	select cleaning material for application according to paint manufacturers' specifications
G-19.02.02	select tools and equipment
G-19.02.03	apply cleaning products to area to be refinished by following safety procedures and protocols to remove dust, wax, oil, greases or other contaminants
G-19.02.04	ensure that surface is thoroughly cleaned and dried
G-19.02.05	ensure that surface is dust free by using tack rag and blow gun

Sub-task

G-19.03 **Applies material to surface.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

G-19.03.01	ensure that work area is clean and well ventilated
G-19.03.02	select and use PPE such as respirators, gloves and coveralls
G-19.03.03	select and use spray equipment required for application according to manufacturers' recommendations
G-19.03.04	operate paint booth and determine temperature and bake time to ensure complete curing
G-19.03.05	dispose of painting materials according to jurisdictional environmental regulations

Sub-task

G-19.04 **Removes masking.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	yes	NV	NV	NV

Key Competencies

G-19.04.01	use removal techniques
G-19.04.02	dispose of masking material according to jurisdictional environmental laws

BLOCK H — DETAILING

Context	Motor vehicle body repairers are responsible for the detailing of vehicles to restore the interior and exterior to pre-accident condition. This step is critical for customer satisfaction.
Trends	There is an increase in the variety of cleaning products available. Many sensitive materials are now being installed in the interior of the vehicles requiring additional care in the detailing process. Hybrid vehicles may require extra caution when detailing.
Related Components (include, but not limited to)	**Exterior components:** all exterior surfaces and accessories. **Interior components**: seats, carpets, dash, headliners, door panels, consoles, audio visual equipment, vents.
Tools and Equipment	Hand tools, power tools and PPE.

Task 20 — Details exterior.

Required Knowledge

K 1	surface defects and contaminants such as nibs, runs and overspray
K 2	types of cleaners such as tire cleaners, exterior soap and window cleaners
K 3	paint care procedures
K 4	curing time of refinishing material
K 5	types of overspray such as paint and undercoat
K 6	topcoats and surfaces
K 7	polishing and washing procedures
K 8	PPE
K 9	WHMIS and MSDS
K 10	OH&S

Sub-task

H-20.01 **Removes overspray.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	no	NV	NV	NV

Key Competencies

H-20.01.01	select and use tools and materials such as polishers, polish, body clay and rubbing compounds to remove overspray from existing paint
H-20.01.02	remove overspray from glass using tools and materials such as razor blades and solvents
H-20.01.03	wet sand and polish surfaces as required

Sub-task

H-20.02 **Polishes vehicle.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	no	NV	NV	NV

Key Competencies

H-20.02.01	evaluate paint finish to determine polishing procedures
H-20.02.02	protect surrounding areas such as plastic mouldings, tires and soft surfaces
H-20.02.03	select and use tools and equipment such as variable speed buffers, polishing cloths and pads
H-20.02.04	select and use materials such as polish, compounds, sponges and spray wax
H-20.02.05	control speed, pressure and angle of polisher to avoid damage to surface
H-20.02.06	clean, maintain and store polishing pads

Sub-task

H-20.03 **Washes vehicle.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	no	NV	NV	NV

Key Competencies

H-20.03.01	select tools and equipment such as pressure washer, hoses and brushes
H-20.03.02	select materials such as tire cleaner, car wash soap and tire dressing
H-20.03.03	follow washing sequence such as using pressure washer, pre-soak vehicle, wash and rinse
H-20.03.04	dry vehicle after wash using materials such as chamois, squeegee and air blower

Task 21 Details interior.

Required Knowledge

K 1	types of cleaning and stain removal products
K 2	types of cleaning equipment
K 3	surface composition
K 4	cleaning techniques and precautions
K 5	WHMIS and MSDS
K 6	OH&S

Sub-task

H-21.01 **Cleans soft surfaces.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	no	NV	NV	NV

Key Competencies

H-21.01.01	select and use tools and equipment such as shampooer and vacuum cleaner
H-21.01.02	select and use materials such as upholstery cleaner and stain removers
H-21.01.03	remove garbage from interior
H-21.01.04	vacuum interior to remove debris

H-21.01.05	remove stains and other contaminants
H-21.01.06	deodorize interior
H-21.01.07	apply surface conditioners

Sub-task

H-21.02 **Cleans hard surfaces.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	no	yes	yes	yes	yes	no	NV	NV	NV

Key Competencies

H-21.02.01	select cleaners for hard surface
H-21.02.02	wipe down surfaces with soft, damp materials such as chamois and rags
H-21.02.03	apply cleaners and dressings to surfaces such as dashes, consoles and door panels
H-21.02.04	clean glass with materials such as lint-free rags, glass cleaner and paper products

APPENDICES

APPENDIX A TOOLS AND EQUIPMENT

Hand Tools

Allen keys
adjustable locking pliers
air blow guns
ball joint remover
body fill spreader
caulking gun
chisels
circuit tester
clamps
crimping tools
cut-out tool (windshield)
dollies
door hem flange tool
files
flange tool
hack saw
hammers
hot water bath
magnet
marking tools
measuring tape
metal chisels
pick
pliers
pry bars
pullers
punches
putty knife and scrapers
ratchets
razor blades and holder
rivet gun
sanding blocks
screwdrivers
slide hammer
sockets, extensions and swivels
soldering tools
specialty bits
spoons
spring compressor (door hinge)
squeegees
stands
straight edge
suction cups
tin snips
torque wrench
trim clip removal tools
utility knife
vice
windshield removal wire
wire cutters
wire stripping tools
wire wheel brushes
wrenches

Power Tools

a/c tools and equipment
air chisel
air compressor
air drill
air hoses
applicator guns
bench grinder
calculator
computer and software
computerized diagnostic equipment
corrosion protection applicator
curing light
cut out knives (pneumatic, electric)
cut-off tool
dent puller
die grinder

Power Tools (continued)

digital camera
door jacks
drill and drill bits
fax machine
frame flange tool
frame gauging equipment
friction jack
fuel storage unit
grinders
glass induction heating system
gun cleaner
heat gun
heating equipment
impact gun
induction heaters
metal saws
plastic repair equipment
pneumatic air chisel
pneumatic hole punch
pneumatic moulding remover
rivet gun (pneumatic)
sand blaster (spot, conventional)
sanders
seam sealer applicator
trouble light

Welding and Cutting Equipment

cutting torch
oxy-fuel equipment
plasma cutter
plastic welder
propane torch
squeeze type resistance spot welder (STRSW)
stud/pin welder
surge protector
tip cleaner
welders (MIG, GMAW, TIG)
welding blankets
welding cart
welding clamps
welding coveralls/apron
welding curtains
welding gauges and hoses
welding gloves
welding jackets
welding shield
welding tip
welding wires/rods
welding/cutting glasses and helmets

Frame and Unibody Repair Equipment

chains
clamps and fixtures
electric winch
frame bench
hook tools
hydraulic jacking equipment
portable hydraulic pulling towers and related equipment
structural straightening equipment
vehicle lift

Lifting Equipment

engine lifts
door lifts
hoists
jacks and jack stands
portable truck box rack
transmission lifts

Measuring and Testing Equipment

body dimensional measuring equipment
centering gauges
datum diamond centering (DDC) gauges
diagnostic/testing equipment
digital volt ohmmeter (DVOM)
lasers
tape measure
tram gauge
ultrasonic equipment
voltmeter

Refinishing and Detailing Equipment

agitators (shaker)
air blower nozzles
blow gun
brushes
chamois
colour identification camera
computerized mixing system
drying equipment (curing light)
exhaust fan
hazardous materials disposal container
gun wash station
masking equipment
mixing tools
paint application equipment
paint booth
paint database
paint measuring sticks
paint mixing machine
paint roller
paint scales
paint suits
power polishers
preparation station
pressure washers
primer application equipment
sanding equipment
shampooer
solvent recycler
solvent resistant gloves
spray guns
spray out cards
strainers
stripe/adhesive removal wheel
sun gun (ultraviolet light gun)
tack cloths
vacuum cleaner (wet and dry)
venturi fan
wash mitts
water hose

Personal Protective and Safety Equipment

coveralls
creeper
dust mask
eye wash station
face shield
fire blanket
fire extinguishers
fire hoses
first aid kit
fresh air respirator
gloves
goggles
hearing protection (ear plugs, ear muffs)
knee pads
respirator (particulate and gas)
safety footwear
safety glasses
shower

APPENDIX B GLOSSARY

abrasives	material used for cleaning or surface roughening such as sand, aluminium oxide or silicone carbide
air bags	refers to inflatable restraints located in steering wheels, dashes, seats, doors, pillars, roof rails, and headliners
detailing	all activities performed for final preparation for delivery to the customer; detailing includes but is not limited to installation of trim and accessories, cleaning and polishing
frame and structural components	provides the vehicle with strength and structural integrity
glass	a hard transparent substance that is laminated or tempered and sometimes tinted. Motor vehicle glass can be fixed as in windshields and rear windows or moveable as in side windows
glass hardware	glass hardware consists of moveable and adjustable parts and components that ensure the operation of moveable glass and consists of but is not limited to tracks, glass run channels, plastic guides, stops and regulators
interior components	interior components consist of trim, upholstery and panels within the vehicle
mechanical and electrical components	mechanical components consists of the moving parts that produce motion or a state of balance including suspension systems (steering and suspension), cooling systems, air conditioning systems, brake systems, the power train and the exhaust system. Electrical components are designed to perform a specific function (e.g. radio, defrost, cruise control) or to generate, store and distribute electricity (e.g. battery, charging system, relays)
outer body panels	portions of a motor vehicle that are attached to the frame or structural components of the vehicle by welding, bonding or by mechanical attachments
passive restraint systems	passive restraint systems include components such as dash, pads, head rest, collapsible steering columns and knee bolsters, motorized seat belts

refinishing	provides a smooth and level surface upon which paint will adhere, by sanding, filling, cleaning and priming the surface prior to the application of a final colour coat
restraint systems	restraint systems consist of passive or reactive safety components which provide occupants with injury protection in the event of a collision
structural components	any primary-stress-bearing portion of the body structure that affects its over-the-road performance or crash-worthiness
structural glass	a specific type of glass with a special design and installation process that adds to the structural integrity of the vehicle
unibody motor vehicle	vehicle design in which parts of the body structure serve as support for overall vehicle

APPENDIX C ACRONYMS

ABS	antilock brake system
GMAW	gas metal arc welding (also called MIG welding)
GPS	global positioning system
MIG welding	metal inert gas welding (also called GMAW)
MSDS	material safety data sheet
NAGS	National Auto Glass Society (Standardized Glass Numbering System)
OEM	original equipment manufacturer
PPE	personal protective equipment
SRS	supplementary restraint system
VIN	vehicle identification number
VOC	volatile organic compounds
WHMIS	Workplace Hazardous Materials Information System

APPENDIX D BLOCK AND TASK WEIGHTING

BLOCK A OCCUPATIONAL SKILLS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	10	15	10	9	15	10	10	15	15	15	NV	NV	NV	12%

Task 1 Uses documentation.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	20	16	15	17	15	15	20	16	13	20	NV	NV	NV	17%

Task 2 Uses and maintains tools and equipment.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	20	21	20	18	25	25	15	21	20	25	NV	NV	NV	21%

Task 3 Organizes work.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	20	16	20	17	25	10	10	18	20	15	NV	NV	NV	17%

Task 4 Applies corrosion protection material.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	15	21	15	16	5	15	20	17	14	10	NV	NV	NV	15%

Task 5 Repairs and replaces trim, body seals and gaskets.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	15	21	15	18	20	25	20	16	13	20	NV	NV	NV	18%

Task 6 Performs final check.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	10	5	15	14	10	10	15	12	20	10	NV	NV	NV	12%

BLOCK B FRAME AND STRUCTURAL COMPONENTS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	20	25	15	18	30	20	22	27	15	25	NV	NV	NV	22%

Task 7 Prepares for repair and replacement of structural components.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	60	50	46	50	50	30	44	50	30	NV	NV	NV	46%

Task 8 Repairs and replaces structural components.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	40	50	54	50	50	70	56	50	70	NV	NV	NV	54%

BLOCK C NON-STRUCTURAL OUTER BODY PANELS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	20	20	15	10	30	20	18	17	10	15	NV	NV	NV	17%

Task 9 Repairs panels.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	60	50	60	50	80	50	50	50	50	50	NV	NV	NV	55%

Task 10 Replaces panels.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	40	50	40	50	20	50	50	50	50	50	NV	NV	NV	45%

BLOCK D GLASS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	5	6	10	7	5	5	8	5	10	5	NV	NV	NV	7%

Task 11 Replaces structural glass.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	40	60	61	60	50	65	58	50	35	NV	NV	NV	53%

Task 12 Replaces non-structural glass.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	60	40	39	40	50	35	42	50	65	NV	NV	NV	47%

BLOCK E MECHANICAL AND ELECTRICAL COMPONENTS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	10	7	15	12	10	15	10	7	10	20	NV	NV	NV	12%

Task 13 Repairs and replaces mechanical components.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	40	50	50	60	60	50	52	50	75	NV	NV	NV	54%

Task 14 Repairs and replaces electrical components.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	60	50	50	40	40	50	48	50	25	NV	NV	NV	46%

BLOCK F RESTRAINT SYSTEM AND INTERIOR COMPONENTS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	10	10	15	20	10	10	9	8	15	15	NV	NV	NV	12%

Task 15 Repairs and replaces interior components.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	20	20	25	26	20	40	20	24	20	40	NV	NV	NV	26%

Task 16 Replaces seat belt restraint systems.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	40	30	30	32	30	30	40	32	40	30	NV	NV	NV	33%

Task 17 Replaces air bag systems.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	40	50	45	42	50	30	40	44	40	30	NV	NV	NV	41%

BLOCK G REFINISHING

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	20	15	10	18	0	15	18	17	15	5	NV	NV	NV	13%

Task 18 Prepares surfaces.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	40	55	60	46	0	40	40	53	50	60	NV	NV	NV	49%

Task 19 Prepares and applies refinishing materials.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	60	45	40	54	0	60	60	47	50	40	NV	NV	NV	51%

BLOCK H DETAILING

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	5	2	10	6	0	5	5	4	10	0	NV	NV	NV	5%

Task 20 Details exterior.

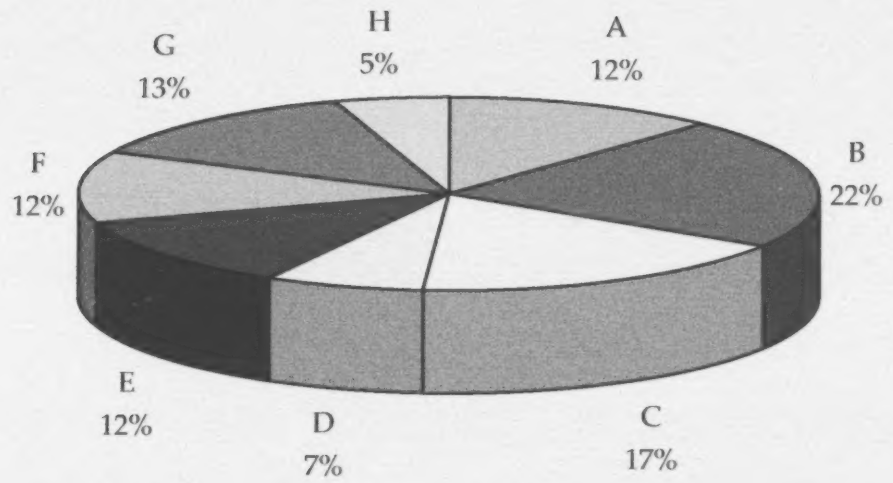
	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	80	60	50	0	50	65	51	50	0	NV	NV	NV	57%

Task 21 Details interior.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	20	40	50	0	50	35	49	50	0	NV	NV	NV	43%

APPENDIX E

PIE CHART*



TITLES OF BLOCKS

BLOCK A	Occupational Skills	BLOCK E	Mechanical and Electrical Components
BLOCK B	Frame and Structural Components	BLOCK F	Restraint System and Interior Components
BLOCK C	Non-Structural Outer Body Panels	BLOCK G	Refinishing
BLOCK D	Glass	BLOCK H	Detailing

* Average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input from workers within the occupation from all areas of Canada. Interprovincial examinations typically have from 100 to 150 multiple-choice questions.

APPENDIX F

TASK PROFILE CHART – MOTOR VEHICLE BODY REPAIRER

BLOCKS	TASKS	SUB-TASKS				
A – OCCUPATIONAL SKILLS	1. Uses documentation.	1.01 Uses manufacturers' specifications and repair procedures.	1.02 Interprets estimates.	1.03 Uses work orders.	1.04 Interprets safety and environmental regulations.	
	2. Uses and maintains tools and equipment.	2.01 Maintains hand tools.	2.02 Maintains power tools.	2.03 Maintains welding equipment.	2.04 Maintains frame and unibody repair equipment.	2.05 Uses lifting equipment.
		2.06 Maintains measuring equipment.	2.07 Maintains refinishing tools and equipment.	2.08 Uses personal protective equipment (PPE).		
	3. Organizes work.	3.01 Follows safety procedures for alternate-fuel vehicles.	3.02 Prepares damage estimate.	3.03 Organizes replacement parts and materials.	3.04 Communicates with others.	3.05 Prepares work area.
		3.06 Maintains safe work environment.				
	4. Applies corrosion protection material.	4.01 Applies weld-through primer.	4.02 Applies corrosion protection for electrical components.	4.03 Applies corrosion inhibitors and sealers.		
	5. Repairs and replaces trim, body seals and gaskets.	5.01 Removes trim, body seals and gaskets.	5.02 Repairs trim.	5.03 Installs trim, body seals and gaskets.		

BLOCKS	TASKS	SUB-TASKS				
	6. Performs final check.	6.01 Inspects vehicle visually.	6.02 Performs final operational check.			
B – FRAME AND STRUCTURAL COMPONENTS	7. Prepares for repair and replacement of structural components.	7.01 Performs vehicle setup.	7.02 Removes components for access.	7.03 Identifies extent of damage.		
	8. Repairs and replaces structural components.	8.01 Straightens structural components.	8.02 Removes structural components.	8.03 Installs structural components.		
C – NON-STRUCTURAL OUTER BODY PANELS	9. Repairs panels.	9.01 Prepares panels for repair.	9.02 Reshapes panels.	9.03 Aligns panels.	9.04 Applies repair materials.	9.05 Shapes repair materials.
	10. Replaces panels.	10.01 Removes panels.	10.02 Installs panels.			
D – GLASS	11. Replaces structural glass.	11.01 Removes structural glass.	11.02 Installs structural glass.	11.03 Repairs laminated glass. **(NOT COMMON CORE)**		
	12. Replaces non-structural glass.	12.01 Removes non-structural glass.	12.02 Installs non-structural glass.			
E – MECHANICAL AND ELECTRICAL COMPONENTS	13. Repairs and replaces mechanical components.	13.01 Removes mechanical components.	13.02 Cleans mechanical components.	13.03 Straightens mechanical components.	13.04 Installs mechanical components.	

BLOCKS	TASKS	SUB-TASKS			
	14. Repairs and replaces electrical components.	14.01 Repairs damaged wires and exterior coverings.	14.02 Cleans corroded components and connections.	14.03 Removes damaged electrical components.	14.04 Installs electrical components.
F – RESTRAINT SYSTEM AND INTERIOR COMPONENTS	15. Repairs and replaces interior components.	15.01 Removes interior components.	15.02 Repairs interior components.	15.03 Installs interior components.	
	16. Replaces seat belt restraint systems.	16.01 Removes seat belt restraint systems.	16.02 Installs seat belt restraint systems.		
	17. Replaces air bag systems.	17.01 Removes air bags and related components.	17.02 Installs air bags and related components.		
G – REFINISHING	18. Prepares surfaces.	18.01 Decontaminates area.	18.02 Sands surfaces.	18.03 Masks off surrounding area.	
	19. Prepares and applies refinishing materials.	19.01 Mixes refinishing materials.	19.02 Performs final wash and tack.	19.03 Applies material to surface.	19.04 Removes masking.
H – DETAILING	20. Details exterior.	20.01 Removes overspray.	20.02 Polishes vehicle.	20.03 Washes vehicle.	
	21. Details interior.	21.01 Cleans soft surfaces.	21.02 Cleans hard surfaces.		